Building the Next-Generation Public Safety Communication Systems: Insights from TJ Kennedy, Acting Executive Director, First Responder Network Authority (FirstNet)

By Michael J. Keegan

Today's public safety communications systems lack the capabilities of modern networks and commercial devices. This fragmentation has put the first responders and the public at risk in emergencies, like 9/11 and natural disasters such as Hurricane Katrina, because different public safety agencies could not communicate with one another. But, beyond hampering the effectiveness of public safety officials, this fragmentation also adds to the cost of the communication systems themselves. Informed by the lessons learned from earlier public safety deployments, the First Responder Network Authority (FirstNet), the nationwide next-generation of public safety communication system, will benefit from strong coordination and a catalyst of federal funds, which will allow responders to overcome prior hurdles to interoperability.

What are the strategic priorities for FirstNet? How is FirstNet pursuing its outreach strategy with key stakeholders and what is FirstNet doing to use collaboration and partnership to meet its mission? TJ Kennedy, acting executive director, FirstNet, shares his insights on these topics and more. The following is an edited excerpt of our discussion on *The Business of Government Hour*.

Would you provide us with an overview of the history, mission, and genesis of FirstNet?

TJ Kennedy: FirstNet was created as part of the Middle Class Tax Relief and Job Creation Act, which was signed on Feb. 22, 2012. Its creation was in response to a long-term issue facing the nation: the lack of a nationwide communication network dedicated to public safety and for use by first responders. Police and fire departments, emergency medical services, and other agencies across the country have often had stand-alone, land mobile radio networks and frequently rely on commercial or other means to access broadband or other data-based services. FirstNet will provide emergency responders with the first nationwide, high-speed network dedicated to public safety. Using a nationwide spectrum license, FirstNet will provide a single platform for daily public safety communications. When natural disasters, threats to our nation's security, or other emergencies occur anywhere in the country, FirstNet will enable local, state, regional, and national emergency responders to communicate at the direction of the incident commander.

FirstNet will be built to public-safety-grade standards using Long-Term Evolution (LTE) wireless technology. LTE a fourth-generation wireless technology that bases its operating standards on the Internet Protocol (IP). IP-enabled networks and wireless devices provide higher capacity and transmission speeds than earlier generations of technology. FirstNet will deliver greater coverage, capacity, connectivity, cybersecurity, and resiliency than the current multiplicity of diverse public safety wireless systems can. It will be a force multiplier, increasing collaboration to help emergency responders save more lives, solve more crimes, and keep our communities safer. This broadband data network fills a fundamental need of the public safety community and a key recommendation of the 9/11 Commission.

Operationally, how is FirstNet organized and could you give us a scale of your budget?

TJ Kennedy: We are an independent authority within the National Telecommunication and Information Administration (NTIA), which is part of the U.S. Department of Commerce. NTIA has dealt with major grants related to broadband. It has

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also done policy work in this area and the Department of Commerce has helped push our mission forward. I say this to acknowledge that we have great support from both. We are governed by a 15-member board consisting of 12 members from state and local governments and the first responder and technology communities, along with the U.S. Attorney General, the Secretary of the Department for Homeland Security, and the director of the Office of Management and Budget, which governs the strategic actions of my organization.

We have a $7 billion spectrum sale allotment that will be coming to FirstNet over time which involves three spectrum auctions, ending with the broadcaster spectrum auction in mid-2015. It also includes the spectrum-fee authority. The board also approved $120 million for FirstNet's management budget for FY2015.

What are your responsibilities?

TJ Kennedy: The FirstNet acting executive director is responsible for the day-to-day operations of the organization and reports directly to the board. The remainder of the senior management team is responsible for planning and directing the development of FirstNet under the executive director. These responsibilities include outreach and consultation, technical designs, finances, administrative tasks, recruitment of personnel and legal matters.

At the end of the day, my job is to make sure that every minute of every day, our team knows that we are here to serve public safety and first responders and to provide them with this critical infrastructure. Public safety is going to rely on this network 24/7 as a mission-critical tool that will assist them in saving lives. I make sure that we are running with great synergy and acting with a sense of urgency. Focusing on the speed of deployment and moving forward is something I want to make sure everybody has front and center every day. For me, having fielded an organization that operates more like a start-up is important. I also need to champion this sense of urgency and mission focus on public safety, which is most critical for me in my role, every day.

What are your top challenges?

TJ Kennedy: Challenge number one is to keep front and center our public safety mission. There are more than 60,000 public safety agencies in the United States. Some of them are as small as one or two individuals while others are quite large, such as New York's Police Department and Fire Department. There are significant challenges, given the diverse size and scope that compose many of the country's

public safety entities. The first challenge is: how do we make sure we meet many of their requirements?

Another challenge is making sure we are moving quickly and communicating effectively. The success of any national endeavor such as our own, depends on getting to "yes." It is an important part of what we're doing. Lastly, it is the challenge of building an organization that focuses on getting results; this requires fostering more of a "start-up" culture and using that environment to marshal resources, get things done, and achieve our mission.

Given your background in both the private and public sectors, leadership is critical no matter the arena. Could you give us a sense of the key leadership principles you follow and maybe illustrate those in practice?

TJ Kennedy: There are three principles that frame my leadership approach: (1) *Honesty*—Being honest in everything that we do and being very direct with all of our constituents about what's happening; both good and bad. I think that's really important. (2) *No Surprises*—I believe in the rule of "no surprises," meaning that, when we make mistakes, we need to inform our stakeholders immediately; when a stakeholder is surprised your credibility can be compromised. (3) *Accountability with Authority*—We must always be accountable for our actions. Being accountable means having the authority to act accordingly. I think pushing that authority down to the lowest possible level to get things done quickly is critical. Many times, in large government organizations that's not the case.

Recognizing that your office was established fairly recently in government terms, I would like to get a sense of your key strategic priorities going forward. Would you elaborate on your strategic roadmap and your priorities going forward?

TJ Kennedy: During the first half of 2014, FirstNet began building in earnest the human and technical infrastructure and programmatic discipline needed to execute its mission. In March of 2014, we released the FirstNet strategic roadmap. It outlined a number of key activities that we planned to engage in over the next 12 months. These activities included issuing the request for information aimed at gathering critical information and holding a public notice and comment period aimed at establishing certain program procedures, polices, and statutory interpretations. Analysis of the RFI and public notice responses is occurring now.

Another activity cited in the roadmap was beginning state consultations. The Middle Class Tax Relief and Job Creation Act has very specific requirements for us to consult with cities,

counties, states, and other agencies, and tribal governments on how to build this network. All states and territories will receive a plan that we've developed collaboratively with them on how the broadband will be deployed in their areas. So that's really what we're very much focused on and we've been delivering on that. We need industry input, public safety input, and the public's input as part of a transparent and open process, so we can drive toward a key solution and use their ideas to make that happen.

As we travel along our program roadmap, we may determine that some of our assumptions were flawed and change course accordingly. We may change the order of, or the actual roadmap milestones as a result. Nevertheless, we believe that we have charted a course that will lead to a successful FirstNet for public safety. We will be providing substantially more detail about each roadmap item in the coming months. It is important to note that FirstNet's deployment strategy will likely be accomplished through a combination of terrestrial systems and the use of mobile and satellite systems.

Would you tell us more about the state consultation effort that you are encouraging to build this nationwide system?

TJ Kennedy: The law that established FirstNet requires it to consult with federal, state, tribal, and local public safety entities to ensure that the FirstNet network is designed to meet the communication needs of public safety across the country. State, tribal and local consultation will be a collaborative process, involving key stakeholders and leadership from each state and territory, and will incorporate enhancements and improvements as they develop. FirstNet works through a designated single officer or governmental body during consultation to gather requirements from key stakeholders for developing its deployment plan.

The collaborative consultation process is an opportunity for stakeholders to participate in the network planning process with the State Single Point of Contact and FirstNet so they and we, understand and support stakeholder needs. Each consultation meeting or other engagement is an opportunity for stakeholders to directly inform the proposed plan for build-out of the network in their state.

Recurring topics of interest during consultation meetings so far have included coverage, potential users of the network, priority of users, capacity of the network, coordination with federal agencies, affordability, use of existing assets, and deployables. Events states have indicated they would benefit from the future network include, for example, mall and hospital shootings, a large mudslide, a wild fire, a national-level sporting event, a parade, a bicycle touring event, a bridge collapse, a tornado, a flood, and a building fire.

FirstNet began its state and local planning outreach efforts in mid-May 2013 by holding six regional workshops. Between October 2013 and December 2014, FirstNet reached more than 30,000 stakeholders at over 150 events, independent from the consultation process. We are determined to make all stakeholders aware of FirstNet and establish a network that is a force multiplier for public safety.

We started the formal consultation process in Maryland in July 2014. By the end of 2014, FirstNet had held initial consultation meetings with eight states and Puerto Rico and scheduled initial consultation meetings with several other states for early 2015.

This is a learning and fact-finding effort. For example, we had a board member and some key staff go to Alaska where they flew with Alaska state troopers to access some key villages that aren't serviced by roads. It's about identifying the best way to deal with places with a lack of infrastructure and within austere environments. In the end, our goal is to understand the needs and unique realities in each state as we build our nationwide architecture. Doing this involves conducting a continuous dialogue with state and local public safety agencies on how best to do build a nationwide public safety communications system that meets their specific needs.

What are some of the inherent weaknesses found in the current public safety communications system?

TJ Kennedy: Today's 911 system is built on an infrastructure of analog technology that does not support many of the features that most Americans expect to be part of an emergency response. Efforts to splice newer, digital technologies

onto this aging infrastructure have created points of failure. The main issue is that they are on disparate spectra in different parts of the country. For example, there is a particular department that is operating in UHF frequencies versus VHF frequencies. You may have a department that's on 700 megahertz (MHz) versus 800 MHz. You have some departments on new, digitally trunked radio systems and others on analog radio systems. As responders help each other, often these disparate radio systems can cause significant communication issues for them. LTE a fourth-generation wireless technology that bases its operating standards on the Internet Protocol (IP). IP-enabled networks and wireless devices provide higher capacity and transmission speeds than earlier generations of technology. On the broadband side, when building the LTE system, we also need to make sure that our public safety and first responders have priority on this system so that, during an emergency, they either have their own network or have their own network with priority. They need to be reassured that the new system capacity won't fail for them during an emergency.

Would you describe the FirstNet system you are building?

TJ Kennedy: For the first time, public safety communications will be based on commercial standards. Mobile and smart phone technology development driven by the marketplace provides great promise. We want to make sure that public safety gets to benefit from the innovation that's happening today. The act establishing FirstNet requires that recommended minimum technology standards be based on commercial LTE. This will bring the benefits of lower costs, consumer-driven economies of scale, and rapid evolution of advanced communication capabilities. The FirstNet operating environment will likely be similar to that of newer personal smartphones. We broadly define its LTE network in distinct layers: Core Network, Transport Backhaul, Radio Access Network (RAN) and Public Safety Devices. A key difference between commercial 4G LTE networks and the FirstNet public safety network is that the FirstNet network is being developed specifically to meet the needs of public safety. The network being established will have additional features, like priority use for first responders. The importance of having a common, standards-based network that is constantly improved by advancements in commercial technology cannot be overemphasized. With each generation of new technology comes improvement in speed and functionality. The work of setting and developing standards to enhance and evolve 4G LTE is continuing on a global basis. FirstNet is involved in the standards development process and is working closely with public safety organizations to support the development of standards and functionality that meet the needs of the public safety users that FirstNet will serve.

It is critical to note that the congress will license the nationwide 700-MHz spectrum to FirstNet; that will improve device and spectrum interoperability. Given that the FirstNet spectrum is 20 MHz in the 700 MHz D Block region of the spectrum, public safety will finally have a communications system that public safety personnel can use, across a variety of jurisdictions, at the same time. No matter where personnel from public safety entities are sent to help in a large emergency, first responders will have immediate access to video, data, and voice communications via the nationwide FirstNet network. Multiple jurisdictions will be able to share access to apps and common systems such as motor vehicle and wanted-person databases.

How does the FirstNet network actually benefit public safety?

TJ Kennedy: Using the FirstNet network will improve situational awareness, decision making and responders' and citizens' health and safety. Just as smartphones have changed personal lives, FirstNet devices and applications will ultimately change the way public safety operates. FirstNet devices will work anywhere on the network and will save time when seconds matter. A market of millions of public safety users will bring savings opportunities to state and local budgets. FirstNet will bring the benefits of a single, nationwide, interoperable network that is built to open standards to public safety agencies across the country. With millions of users on a single network, we can take advantage of increased vendor competition and economies of scale to drive down the final cost to the public safety user. ◘

To learn more about First Responder Network Authority (FirstNet), go to www.firstnet.gov/

To hear *The Business of Government Hour's* interview with TJ Kennedy, go to the Center's website at www.businessofgovernment.org.

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